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Spring 2020

IS 631-852: Enterprise Database Management

James Markulic

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Course Syllabus

Instructor: James Markulic

Lecture: In Class or Distance Learning

Office Hour: By appointment

E-Mail: Markulic@njit.edu

Course textbook:

- Avi Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concept, McGraw-Hill, ISBN 0-07-352332-1, 6th edition.

Course Description:

This course introduces the foundations of database systems, focusing on data modeling, query design, and applications. It provides an understanding of the issues in designing and managing database systems as an essential organizational resource. The components of enterprise data management are covered, with a strong emphasis on data modeling as well as the DBLC (Data Base Life Cycle). Implementing a database using SQL is an art and a science and will be addressed in the course. Data warehousing and data mining issues will also be examined.

Class Communication Space/Learning Management System:

We will be using Canvas, a state-of-the-art, open source, Learning Management System (LMS), and is nationally/internationally the fastest-growing LMS. We will be using this system for online sections of the class, where I will be posting additional resources as needed throughout the semester. The PowerPoint slides for each lecture will be available for download in Canvas.

Course Goals:

At the end of the course, you should be able to develop a set of business requirements and implement a database that fulfills those requirements.

1. To understand the design and development issues regarding databases and enterprise database management.
2. To convert a set of requirements into an effective database structure.
3. To obtain a strong conceptual foundation of the underpinnings of database design and enterprise database management.
4. To implement a database using some commercial database management systems, such as using SQL within MS/SQL Server.
5. To communicate effectively through oral presentations and written documents.

Assignments, Due Dates and Policy on Late Submissions

Assignments	Due date	Grade Category
Attendance	See Canvas Upcoming Events Block for dates	Attendance
Submission Area for ERM Assignments		Major Assignment
BaseBall Normalization Assignment		Short Assignments
Relational Algebra Assignment		Short Assignment
Create BaseBall Database		Short Assignment
Create Foreign Keys		Major Assignment
Create the Missing HomeGames Table		Short Assignment
Submission for Chapter 3 SQL Questions		Major Assignment
View Assignments		View Assignment
Chapter 5 ODBC Submission Area		Major Assignment
Chapter 5 SQL Questions		Short Assignment
Trigger Assignment		Major Assignment
Function Assignment		Major Assignment
Transaction Processing Assignment		Short Assignment
Class Project Questions and Crime Data		Class Project
Class Project Basic Graphs (Extra Credit)		Class Project
Class Project Crime Data		Class Project
Class Project Geospacial Data		Class Project
Critical Thinking Quiz		3% of Grade
Extra Credit		Up to 5% of Grade

Changes to assignments may be made at the professor's discretion. Attendance does not apply to the DL version of the course. An extra 5 points will be added to the class project in the DL sections.

The final grade will be calculated as follows:

Short Assignments	20%
Major Assignments	40%
View Assignment	7%
Class Project	25%
Critical Thinking Quiz	3%
Attendance	5%

Once assignments are graded, you will not be able to resubmit the assignment. Make sure that you are submitting the correct files and that it has been properly tested before submitting it for grading.

Assignments will automatically have 1 full letter grade deducted if it is more than 21 days late. So at that point, the highest grade you can receive is an 84. An additional 5 points will be deducted for every 2 weeks after that. The course builds on the assignments from each section so not completing the work will make it difficult to keep up with the classwork. The only exception to this is if you have a very good reason and I am asked for an extension **BEFORE** the due date.

All assignments must be submitted by the last day of class unless otherwise noted in Moodle or you have received prior permission from the professor. Assignment work will not be accepted after that date. Class project work has a separate due date and can be submitted until that time. No late submissions will be accepted for the class project.

Our Strict Policy on Collaboration/Cheating:

If you submit an assignment that was submitted in another semester, you will automatically receive a 0 for that assignment. NO EXCUSES will be accepted.

Every assignment/project is to be regarded as an examination. The NJIT Honor Code will be upheld. The [NJIT Honor Code is available for your review](#). Students found cheating or collaborating or plagiarizing will be **immediately** referred to the Dean of Students and the NJIT Committee on Professional Conduct and subject to Disciplinary Probation, a permanent negative marking on their record, **possible dismissal and a definite grade of 'F' in the course. All submitted assignments are carefully checked for similarities, and plagiarism and guilty students will be identified. This also includes use of instructor materials no matter how they were provided to you.**

Policy on Submission of Assignments/Projects: The format of submission will be announced with each assignment/project. Assignments and projects are to be posted in Moodle.

Below are the TOPICs covered in the course and the related TEXTBOOK readings. Remember one of the keys to success in IS631 is your own self-discipline - your goal should be to maintain currency each week, and NEVER fall behind!

For DL Classes, this is meant as a guideline to keep you on track for completing the material. You are free to complete assignments early; however, point will be taken off for work submitted past the Moodle due dates.

Week #	Topic(s)
1	Introduction to Database Systems
2	Entity Relation Model
3	Relational Database Design
4	Introduction to Relation Models and Relational Algebra
5	Intro to SQL
6	Intro to SQL – Continued
7	Intermediate SQL
9	Intermediate SQL - Continued
10	Advanced SQL
11	Transaction Processing
12	Cloud Computing and Database
13	NoSQL Databases
14	Class Project Presentations

Note: The syllabus may be changed to be adjusted to provide better educational services. In such a case, the changes will be announced in advance.

Supplementary readings if you need extra help (Not Required):

- A First Course in Database Systems (3rd edition) by Ullman and Widom.
- Database Systems: The Complete Book (2nd edition) by Garcia-Molina, Ullman, and Widom
- Database Management Systems (3rd edition) by Ramakrishnan and Gehrke.
- Fundamentals of Database Systems (6th edition) by Elmasri and Navathe.
- P. Rob, C. Coronel, S, Morris DATABASE MANAGEMENT: DESIGN, IMPLEMENTATION, AND MANAGEMENT 10e (Tenth Edition), Thomson/Course Technology – Cengage Learning. ISBN 13: 987-1-111-96960-8. (in case you do not have basic database concepts and knowledge.)

Assignment Summary

Date	Details
Fri Jan 24, 2020	Introduce Yourself
Thu Feb 6, 2020	ERD Assignment Part 1
Thu Feb 13, 2020	ERD Assignment - Part 2
Thu Feb 20, 2020	Create BaseBall Database BaseBall Normalization Assignment
Thu Feb 27, 2020	Relational Algebra Assignment
Wed Mar 4, 2020	MidTerm Jeopardy extra Credit
Thu Mar 5, 2020	Create the Missing HomeGames Table Assignment Chapter SQL Questions - Part 1
Thu Mar 12, 2020	Create Foreign Keys - Assignment 1 Chapter 3 SQL Questions - Part 2
Thu Mar 19, 2020	View Assignment Part 1 - View Specs
Thu Mar 26, 2020	View Assignment Part 2 - View SQL
Tue Mar 31, 2020	View Assignment Part 3 Grade Submission
Thu Apr 2, 2020	#1 - Chapter 5 ODBC Submission Area #3 - Chapter 5 SQL Question Assignment
Thu Apr 9, 2020	#2 - Function Assignment #4 - Trigger Assignment Transaction Processing Assignment
Mon May 4, 2020	Extra Credit
Thu May 7, 2020	Critical Thinking Quiz
Fri May 8, 2020	Class Project Extra Credit - Basic Graphs in SSMS - Submission Area Class Project Part 1 - SQL Questions - Submission Area Class Project Part 2 - Geospatial data and Front End Class Project Part 4 - Crime Data
	Roll Call Attendance